511 Transit Program Roles and Responsibilities

MTC provides static transit data (i.e., schedules/trip planning information) through the 511 phone and web service and real-time transit departure information through the 511 phone and web services and the Regional Hub Signage Program. MTC will provide all transit data through data feeds available at 511.org .MTC requires the full participation and support of all transit agencies to deliver quality and timely information. MTC and the transit agencies have jointly developed data transfer mechanisms for schedule, trip planner and real-time transit data and identified appropriate roles and responsibilities for all parties, as identified in this document.

This document represents a compilation of two separate documents that had been reviewed previously by the Regional Transit Information System Technical Advisory Committee and the Regional Real-Time Transit Technical Advisory Committee. MTC will update these requirements on an as-needed basis with transit agency partners. Section 1 of this document covers Regional Transit Information System Roles and Responsibilities and Section 2 covers Regional Real-Time Transit System Roles and Responsibilities.

There are three governing documents for the program that support each other and are supported by other documents. They include:

- 511 Transit Program Roles and Responsibilities (this document)
- Appendix B-1 to Resolution No. 3866 entitled "511 Transit Information Requirements"
- Real-Time Transit Information System Requirements

Section 1: Regional Transit Information System Roles and Responsibilities

Note: The track changes below in Section 1 represent the only edits to the previous "Appendix B-1 511 Transit Program Requirements" document reviewed by the Regional Transit Information System Technical Advisory Committee.

In response to State legislation (Senate Bill 1474 [chapter 256, statutes 1996]), MTC adopted a Transit Coordination and Implementation Plan in February 1997 designed to improve the connections between the region's transit services. One of the projects in the Plan was to provide intra- and inter-operator trip planning information and maintain an accurate transit information database.

Since 1997, MTC's Regional Transit Information System (RTIS) project has delivered schedule, route, fare, and trip planning information online for over 30 Bay Area public transit agencies. The RTIS was created by MTC, in cooperation with the Bay Area's transit agencies, to collect, organize and disseminate schedule, route and fare information for the public transit providers in the Bay Area through 511/511.org.

MTC requires the full participation and support of all transit agencies to deliver quality information for the 511 Transit website by providing timely and comprehensive information updates; routinely performing quality checks; and providing notification about changes to, and ongoing support for, the data exchange interface with 511 Transit.

MTC's Responsibilities:

MTC agrees to:
1. Operate and maintain the RTIS program, including the 511 Transit website, system software and hardware, transit agency data and tools used to import such data, the regional transit database, transit trip planning software, a geographic information system and other relevant new applications after their development.
2. Collect, organize and disseminate schedule, route, stop, fare, trip-planning, announcement/alert and agency overview information using data from Bay Area public transit agencies. MTC's goal is to make this information available on the 511 Transit website and trip planner, in addition to other dissemination channels (e.g., mobile devices, texting), prior to the go-live date of major transit agency schedule and service changes.

3. In collaboration with transit agencies, conduct sample quality assurance data testing prior to posting new information on the website and in the trip planner.

4. Provide an ongoing feed of this static transit data to individuals/companies interested in developing applications using such data.

5. Work with transit agencies on streamlining and/or automating data transfer processes, where possible. MTC, in collaboration with agencies, will evaluate and implement changes to existing data transfer tools/processes. MTC will provide data transfer documentation to agency staff.
6. Provide training to transit agency call centers on the use of the public and/or call center transit trip planner interfaces. Coordinate with transit agency staff to review and address any agency or customer feedback on these tools.
7. Provide transit agencies with a transit trip planner entry form that can be embedded onto the agency's own website. MTC agrees to provide initial and ongoing support of agency integration of the trip planner entry form into its own website(s).
8. Provide agencies access to the 511 Transit website's Content Management System (CMS). Such access allows agencies to post agency-specific service announcements, update transit agency profile pages and review agency-specific usage reports.
9. Coordinate with agencies and post relevant regional announcements on the 511 Transit website and the 511 phone system.
10. Organize the RTIS Technical Advisory Committee meetings with transit agencies; the goal of these meetings is to gain insights and gather input from transit agencies on program issues, including tool development and design issues, data transfer processes and/or tools, etc.

Transit Agency Responsibilities:
Transit agencies agree to**:**

1. Provide accurate, complete, timely information regarding transit routes, stops, schedules, fares, service disruptions and, where available, real-time transit departure times for dissemination on 511 phone, web and other services.
2. Transmit schedule and other transit service information to MTC in advance of any schedule changes to allow for MTC's timely inclusion in the 511 Transit website. (For agencies using the XML data import/export schema, this means at least ten business days prior to the go-live date. For transit agencies using other data import/export strategies, this means at least 20 business days prior to the go-live date.)
3. Perform quality control review on a representative sample of agency service data prior to transmittal to MTC for MTC's timely inclusion in the 511 Transit website, the review should focus on the data changed for that upcoming service revision.
4. Notify transit customers of the availability of 511 information on transit agency web sites, in printed materials, at bus stops/rail stations, and on real-time signs at transit hubs.
5. Share data quality control review plan/process with MTC, as needed.

Section 2: Regional Real-Time Transit System Roles and Responsibilities

Note: The track changes below in Section 2 represent the only edits to the previous "Regional Real-time Transit System Roles and Responsibilities" document reviewed by the Real-time Transit Technical Advisory Committee.

MTC and transit agencies are jointly responsible for delivery of real-time transit information to the traveling public via 511 (e.g. phone and web), the regional real-time hub signage program, and participating transit agencies. The Real-Time Transit Information System will develop a real-time transit arrival/departure information system for the San Francisco Bay Area that does the following:

1. Provides accurate vehicle prediction arrival/departure information for every stop on routes equipped with technology to make these predictions.
2. Collects from transit agencies all related real-time transit data in a standard format that populates a regional data store for data dissemination via the 511 phone system, 511.org, MY 511, PDAs, and regional real-time signage as well as data sharing between transit operators.

There are three governing documents for the program that support each other and are supported by other documents. They include:
1. Regional Real-time Transit System Roles and Responsibilities (this document)
2. Regional Real-time Transit Information Data PolicyAppendix B-1 to Resolution No. 3866 entitled "511 Transit Informaton Requirements" (included in SB 1474)
3. Real-time Transit Information System Requirement.

MTC will gather from partner transit agencies the required data to supply the Real-Time Transit Information System. The preferred data transfer standard is Java Message Service (JMS). Under extenuating circumstances, approved by MTC, transit agencies can use Web Services as the data transfer standard. The following policies outline the high-level roles and responsibilities of data sharing and data storage for MTC and the transit agencies for the regional real-time transit program. Detailed responsibilities related to the transference of data using JMS or Web Services are included in Appendices A and B. Appendix A contains the JMS details and Appendix B includes Web Services.

MTC's Responsibilities:
MTC agrees to:

1. Adhere to the system requirements for reliability, accuracy, performance, etc. as defined in Real-time Transit Information System Requirements document.

2. Develop, operate and maintain a central clearinghouse ("Regional System") that will collect all real-time transit data from transit agencies.
   - Ensure Regional System meets security levels equivalent to industry standards.
   - Configure Regional System to archive configuration data no longer than 90 days.

- The Regional System will not store real-time prediction data on an on-going basis. On a routine basis, not to exceed monthly, MTC will log and store prediction data for performance monitoring analysis. The process will include: (i) two to three hours of logging of transferred prediction data from a transit agency; (ii) data will be transferred to a database not connected to the Internet; (iii) prediction data will be deleted after performance monitoring analysis is completed; and (iv) MTC will refer any requests for archived prediction data, including Public Records Act requests, to the appropriate transit agency. The transit agency will decide whether or not to grant MTC permission to release the data.
- Support future recommendations from the Transit Connectivity Plan regarding archiving policies of arrived-status data for monitoring on-time arrival. Until such a plan is in place to use arrived-status data, MTC will not store it. MTC will work with the transit agencies to determine a secure data storage policy.

3. Develop, operate and maintain the necessary equipment and software from the Regional System side to support the transfer of real-time data from transit agency systems to the Regional System, as defined in the latest versions of the following data transfer documents:
   - Extensible Markup Language (XML) Document Type Definitions (DTDs) for Java Message Service (JMS) Implementation
   - Extensible Markup Language (XML) Document Type Definitions (DTDs) for Web Service Implementation

4. Provide a data feed to any transit agency that requests real-time data. The Regional System will provide data in the same formats defined in the latest versions of the following data transfer documents:
   - Extensible Markup Language (XML) Document Type Definitions (DTDs) for Java Message Service (JMS) Implementation
   - Extensible Markup Language (XML) Document Type Definitions (DTDs) for Web Service Implementation.

5. MTC may share real-time transit data, listed in Appendix C, with third party ISPs and the general public. MTC will require recipients to sign a license agreement, which will include but not be limited to: revocable rights, data is "as is", and trademarked/copyrighted materials from either 511 or any other participating transit agency may not be used in connection with these data.

6. MTC will not restrict transit agencies from providing their real-time data to third party ISPs as long as there is no impact to the quality and maintenance of the transit agency's data transfer to the Regional System.

Transit Agency Responsibilities:
Transit agencies agree to:

1. Adhere to the transit agency requirements as defined in the latest version of the Real-time Transit Information System Requirements document.

2. Establish a connection to the Regional System that follows the Regional System protocols outlined in the appendices to transfer all real-time transit data from the transit agency real-time prediction system to the Regional System.

3. Operate the application to transfer real-time prediction data to the Regional System.

4. ~~Transit agencies may request a real-time data feed from the Regional System but may not redistribute the data of another transit agency to any third parties and may not store the data received from the Regional System.~~

4. Ensure that there is no impact to its provision of Prediction Data, in the event that the transit agency provides its specific prediction data to a third party.

<u>Joint Responsibilities:</u>
MTC and the transit agencies agree to:

1. Conduct on-going performance monitoring to ensure accurate and timely transfer of data to the Regional System and accurate provision of real-time data to the public.
    a. Transit agencies shall define prediction accuracy standards specific to their real-time systems and shall monitor that these standards are being met.
    b. MTC will conduct monthly performance monitoring by comparing prediction outputs from the transit agencies with prediction inputs received in the Regional System to confirm that severe latency (i.e. more than two minutes) is not introduced. The Regional System shall continuously monitor incoming data flows from transit agencies and provide automated alarms when data is not delivered after fifteen minutes. MTC staff or contractors will work with transit agency staff to resolve data flow issues immediately.
    c. MTC will conduct monthly performance monitoring to confirm data accuracy from the rider's perspective. Procedures will include calling 511 from stops and comparing predictions to the actual observed arrival/departure times. Data accuracy is expected to meet the following minimum requirements:

Prediction (in minutes)	Must meet accuracy … (Reliability)	Accuracy measurement (in minutes)
1 to 10	90% of the time	3
11 to 25	85% of the time	4
Plus 25	85% of the time	6

If these minimum standards are not met, MTC and the transit agency will work to improve accuracy and agree on a remediation plan. MTC reserves the right to not display data that does not meet these minimum accuracy requirements.

2. If the real-time transit information industry evolves to suggest potential revenue for real-time transit data, MTC will develop, in consultation with transit agencies, a policy recommendation to the Commission.

Appendix A
JMS Data Transfer Requirements

MTC requires that all transit agencies use the JMS data transfer standards to transfer all real-time transit data from their real-time transit systems to the Regional System. Under extenuating circumstances, MTC may allow agencies to use the Web Services standards outlined in Appendix B. The following policies address the roles and responsibilities specific to JMS as defined in the latest version of the Extensible Markup Language (XML) Document Type Definitions (DTDs) for Java Message Service (JMS) Implementation.

MTC Responsibilities:
MTC agrees to:

1. Supply each transit agency with a JMS interface application (including sample data) that performs the following functions:
    a. Logs into MTC's data transfer server;
    b. Publishes prediction data from the transit agency's real-time system;
    c. Responds to requests from the Regional System for transit route and stop inventory (see item 2 for an optional way to provide configuration data);
    d. Responds to requests from the Regional System for arrived status.

Transit Agency Responsibilities:
Transit agencies agree to:

1. Establish and maintain a connection to the Regional System by performing the following tasks:
    a. Install the JMS interface application, provided by MTC, on a server with access to the Internet within the transit agency's or their designated vendor's secure network (i.e. behind the firewall).
    b. Modify the interface application by:
    I) Replacing the sample data from the MTC's interface application with live data from the transit agency's prediction system;
    II) Changing out the hard-coded data in the interface application that responds to transit route and stop inventory with current configuration data from the transit agency's internal systems (see item 3 for an optional way to provide configuration data);
    III) Replacing the hard-coded data in the interface application that responds to "arrived" status requests with current arrived status data from the transit agency's internal systems.
    c. Grant the interface application access to the transit agency real-time prediction system to enable the application to collect and publish real-time data.

2. Operate the application to publish real-time prediction data to the Regional System.
    a. Publish the real-time predictions to the regional data transfer server;
    b. Accept and respond to requests from the regional data transfer server for transit agency real-time configuration data and arrived-status data unless using the configuration option defined in item 3;
    c. Maintain the interface application and data feed to the regional data transfer server.

Appendix B
Web Services Data Transfer Requirements

Under extenuating circumstances, MTC may grant transit agencies the authorization to use the Web Services standards to transfer all real-time transit data from their systems into the Regional System. The following policies address the roles and responsibilities specific to Web Services as defined in the latest version of the Extensible Markup Language (XML) Document Type Definitions (DTDs) for Web Service Implementation.

MTC Responsibilities:
MTC agrees to:

1. Supply each authorized transit agency with 1) the Extensible Markup Format (XML) document type definitions (DTDs) for the messages exchanged between the transit agency web services and the 511 system and 2) the Web Service Description Language (WSDL).

Transit Agency Responsibilities:
Transit agencies agree to:

1. Establish and maintain a connection to the Regional System by performing the following tasks:
    a. Maintain a web services server with access to the Internet. The server location is at the discretion of the transit agency.
    b. Based on the document type definitions provided in the latest version of the Extensible Markup Language (XML) Document Type Definitions (DTDs) for Web Service Implementation, write software code to reply to requests from the Regional System for configuration data (unless using the configuration option defined in item 3), prediction data, and arrived status data.
    c. Maintain the data feed to the regional data transfer server.

2. Operate the application to accept and respond to requests from the Regional System for:
    a. real-time predictions;
    b. real-time configuration data unless using the configuration option defined in item 3; and
    c. arrived-status data.

Appendix C
Real-Time Data to be Shared with External ISPs and General Public

Configuration data:
- Agency name
- Agency type (e.g. rail/bus)
- Route names
- Route codes
- Route database IDs
- Route direction names
- Route direction codes
- Stop names
- Stop ID codes (regional IDs)
- Stop database IDs

Prediction data:
- Time stamp
- Stop database IDs
- Three predictions w/full date-time (e.g. yyyy-mm-dd hh:mm)